1: Underhill E-5 (1931-1935)1946 NU28 Papago NU28

ingly. Each man took only one horse, rode it to the salt beds, loaded it, and walked home. Each pilgrim must keep his horse fresh for the trip. If he had none, he might borrow, and no one would dare refuse. The compensation to the horse's owner was half a load of salt, or one saddlebagfull. The saddlebags taken were the ancient netted receptacles of maguey fiber. Inside these the salt was wrapped in handwoven cotton sheets or, in old days, fiber mats. Each pilgrim must make ropes of hair or of maguey fiber, for a bridle and for hobbling his horse. He wore, in the old days, only breech cloth and sandals. At his waist he carried two canteens, made of gourds, covered with rabbit skin, and slung in a grass net. He also carried a pouch of parched corn meal and the small watertight basket which was his only utensil for eating and drinking. Beside the corn meal, "ripe men" might carry as much dried squash, tortillas, or any other food as they could manage.

For all equipment there was a special vocabulary, analogous to that used on the warpath. The horse was called the partner; the gourd, the jar; the basket, the dish; pinole, gruel; hay, weeds; salt, corn. For other common terms there were words showing a similar slight variation. These words the neophyte must learn and not misuse, under pain of accident on the journey.

Each village took prayer sticks in some form, to be offered to the ocean. The following list will show the variety introduced under the general heading prayer-stick offering:

Komarik: prayer sticks with two turkey or eagle feathers. Left at each camping place, and one thrown by each man into the sea.

Pisinimo: eagle down; no sticks. Each man brings his own down and throws it into the sea.

Anegam and Santa Rosa: peeled white sticks of western willow; no feathers. Carried by leader. One placed at every camp, and one given each man to throw in the sea.

Akchin: sticks with turkey or eagle feathers carried by leader, placed at each camp along the way and given men to carry into the sea and to bring back again. One large stick, with streamer of red cloth, planted on the beach.

San Miguel: strips of red cloth thrown into ocean.

5: Castetter & Bell N-5 (1938-1940) 1942
NU28 Papago NU28
Pima NU29

Ginning, Plucking, Spinning and Weaving

It was woman's work to gather cotton, but weaving was an old man's art although women might help at times.[462] Weaving of cotton was a practice common to both Pima and Papago.

One method of ginning cotton was to turn upside down a thick pottery vessel about fifteen inches in diameter made specifically for the purpose. A mat of cotton bolls was stretched over the bottom of the vessel and a smooth arrowweed stick (about eighteen inches long and three-fourths of an inch wide), from which the bark had been peeled, was rolled over the cotton, working the seeds out of the lint and toward the edge of the mat, where they dropped over the side of the bowl. This was continued until all seeds were removed.

After ginning, the cotton was spread on a cleaned smooth spot on the ground and plucked with the plucking bow in the same manner as that described by Spier[14] for the Maricopa. This was a scraped stick of arrowweed two to three inches long, strung taut to form a small bow. The bowstring was held close to a mat of cotton and plucked, the string thereby catching up the cotton fibers which were wrapped into a tight roll around the string due to its vibration. When pulled off the string, it was rolled into a loose yarn on the thigh, and was then ready for spinning. One Pima informant insisted that ginning was also done with the plucking bow, the fiber gradually being plucked away, leaving the seeds. In all probability the plucking bow was not aboriginal among these Indians.

Spinning was done by women on a simple spindle, and this process was described by Emory[15] in 1846. Although weaving was not highly developed among the Pimans, it was done on a loom, by old men, in a manner described for the Pima in 1852 by Bartlett. Such a loom, as well as a spindle, is figured and described by Russell.[16]

14 Spier, *Tularosa Tribes*, p. 118.
15 Emory, *op. cit.*, p. 85.
16 Bartlett, *Narrative*, II, 255; Russell, *Pima*, p. 148-51.

17:Castetter & Underhill N.E-5 (1931-1934) 1935
NU28 Papago NU28

Russell (22)
222 refers to the Papagos as trading acorns *(Quercus oblongi-*
[434] *folia)* to the Pima.

The important fruit crop comes from species of cactus, and of these the giant cactus or sahuaro *(Carnegia gigantea)* is most outstanding, its ripening preluding the rainy season, the drinking ceremony, and the new year. The Papagos depend upon this fruit to a much greater extent than do any other Indian people of the Southwest, and some six hundred families gather about 100,000 pounds each year (25).

222 Every family has an accustomed camp on some slope
361 where sahuaro grows, and here they have a rough shelter, with a water jar, perhaps a metate, and a cooking pot. Cactus camp is always an occasion of jollity. It means almost the first fresh food of the year, for much of the pulp is eaten fresh; the first taste of anything sweet; and, principally, the preparation for the great drinking ceremony which is regarded as responsible for bringing the rains.

222 The picking season lasts about two weeks. The women of the camp, sometimes assisted by the men, make two trips a day into an area perhaps half a mile square, which is their acknowledged territory, visiting every cactus plant in this area once in three or four days to gather the fruit as it ripens. Each carries a bowl-shaped, water-tight bas-
[415] ket (more recently a lard pail is used) to receive the pulp. One large basket, used as a general receptacle, is propped in an ocotillo bush *(Fouquieria splendens)* at some central point.

222 The fruit of the sahuaro grows at the extreme top of
417 the shaft, which is sometimes twenty-five feet high, or at the tips of the branches, and is hooked down with a long pole made of two giant cactus ribs spliced together. For-
[283] merly the splicing was agave fiber; now it is wire. At the top of this pole, and again at a lower point, perhaps five feet down, are affixed short transverse sticks of creosote bush *(Covillea glutinosa)* or of catclaw *(Acacia greggii)* for the purpose of aiding in dislodging the fruit.

17:Castetter & Underhill N.E-5 (1931-1934) 1935
NU28 Papago NU28

basket bowl constituted the drum, and a small basket might serve as a drinking cup. All these because of the hard usage received were usually made of willow throughout, but for the water-tight vessels willow was essential as it swelled and filled the interstices.

The water bottles (no longer used) were tall, slender bottle shapes with an incurving neck. They were smeared outside with a gum-like secretion from the white brittlebush *(Encelia farinosa)*.

The basket granaries seen were about three feet high and sloping up gradually from a two-foot base. The warp element was beargrass *(Nolina erumpens)* or wheat straw when the latter was available; the weft, mesquite bark *(Prosopis velutina)*. ((For details see Kissell, 16).

The tools for coiled basketry are awls with points of varying length, at present made of steel but formerly of mesquite wood, generally with a handle of creosote bush wood *(Covillea glutinosa)*.

COTTON SPINNING AND WEAVING

Weaving was a rare art practiced by a few old men. One who wanted a cotton blanket or skirt would trade for the cotton, either from the few who raised it or from the Pimas. He might be able to have the spinning done at home but generally he brought the load of raw cotton to the weaver, with the gift of a large basket, beads, or dried produce. This was the price for the weaving.

The weaver called in all his neighbors for a spinning bee, giving them their meals as pay. Both men and women could spin but it was a favorite occupation of old men. They first ginned the cotton by putting it in a basket bowl and working the seeds out with a stick. To separate the fibers the worker twanged his bow string over them, causing the topmost fibers to twist around the string. This method is described by Spier (23) for the Maricopa who perhaps learned it from the Pima. The cotton was spun on a spindle of arrow weed *(Pluchea sericea)* eighteen inches high, with

17:Castetter & Underhill N.E-5 (1931-1934) 1935
NU28 Papago NU28

283 a whorl made of a section of sahuaro rib two inches wide and three or four long. The spinner placed the spindle tip in a depression in the ground then twirled the spindle clockwise with his right hand and fed the cotton with his left.

284 The loom was horizontal. The weaver placed upright in the ground four stakes of ironwood *(Olneya tesota)* or other hard wood so that they stood ten inches high. They formed a rectangle three feet wide and as long as the desired piece of cloth, generally about seven feet. Across the three-foot width the weaver fastened two cross-pieces, usually of sahuaro rib tied on with buckskin thongs. Across these the cotton warp was strung, passing under each bar and back over the top so that the strands formed a figure eight. This was the only shedding device used, for the weaving was all in one color. The batten was a length of sahuaro rib and the shuttle a short, smooth stick of creosote bush *(Covillea glutinosa)*.

Narrow belts, headbands, and cradle bands were woven on the same sort of loom but much narrower. These were plain red or red and white. The pattern was entirely in the [285] warp where strands of cotton, dyed red with *Krameria glandulosa*, were arranged in the desired order. The weft was all white and used merely as a filler.

PLANT AND ANIMAL MATERIALS USED AS SOURCES OF ROPE AND STRING

The Papago had a plentiful supply of rough cordage 283 ● material but very little that would make fine strong string. The rough materials were soapweed *(Yucca glauca)* and lechuguilla *(Agave lechuguilla)*. The simplest cordage was made of withes of soapweed tied together but not twisted, the leaf being split into four strands with the thumbnail and the two butt ends tied together, making a cord five or six feet long. This was used in lashing the house frame together, thatching, suspending shelves, and tying up bundles of material.

Twisted cord was made of *a'ur* or lechuguilla. The Papagos describe this as having finer fibers than the agave which was eaten, though both might be used. The leaves were hacked off at the base of the plant with a chisel-pointed stick of hard wood, just as were those of sotol. The withered leaves which had dried out slowly were considered best; those which were cut green and baked had less strength in the fibers. The sharp needle ends were cut off the leaves and they were carried to a place where water was available for the shredding. The leaves were laid on a flat stone and pounded with another stone. The loosened pulp was combed out with a sharp stick and washed away with water.

For rope making, the fibers must again be moistened. They were then pulled into a fluffy bunch and rolled into cord on the spinner's bare thigh. Sitting on the ground, he fed the fibers and held them taut with his left hand, while his right rolled them downward, then let them spring back and twist.

For two-ply string two strands were rolled separately downward, then both together upward; this was the regular cord used in making the woman's carrying net and the men's net bag. Four-ply rope was made by doubling again

17:Castetter & Underhill N.E-5 (1931-1934) 1935
NU28 Papago NU28

283 and rolling in the opposite direction and this was used to attach the headband to the carrying net and later in making harness. Lechuguilla fibers and the prepared cordage were articles regularly used in bartering with the Pimas for blankets and cotton.

For fine string very little cotton was available, and human hair was easily obtained from older women who cut it at the shoulders for convenience. All hair was saved and the men made it into fine ropes, rolling it on the thigh like the lechuguilla fibers. Such ropes, always knotted at each end, were of necessity short but might be as thick as four-ply. Two-ply, four-strand hair rope was used to bind the carrying frame to its poles, and sometimes as lashing for a baby's cradle.

With the advent of horses the Papagos had a need both for long, strong ropes and material for making them, and they soon began to make ropes of horsehair, using for the purpose a primitive rope twister on the principle of an inverted spindle. This twister consisted of two pieces, the larger made of giant cactus rib *(Carnegia gigantea)*, the other of some hard wood such as creosote bush *(Covillea glutinosa)*. A four-strand rope made with the rope twister is the usual one used for halters and bridles.

Neither lechuguilla cord nor hair rope was very flexible so the Papagos had to resort at times to the highly valued buckskin thong, while for firm smooth fastenings there was no substitute for deer sinew, which shrinks tightly when it dries and obviates the necessity for knots.

Men who needed buckskin thongs usually obtained one or more deer skins by barter or by gift from the hunters. Thongs were used in wrapped twining, where the article must be flexible, like a door; also in cradle lashings, and especially for sandal fastenings. They were cut from a dressed piece of buckskin with a sharp flake of quartz.

Sinew was obtained principally from the back of a deer but also from the leg. It was rolled and stored and when wanted was soaked, a very fine strand loosened with

17:Castetter & Underhill N,E-5 (1931-1934) 1935
NU28 Papago NU28

the teeth, and pulled off. Sinew was always used for fasten- 253
ing the hafting of stone implements and attaching the feathers, foreshafts, and heads of arrows. For the bow string a two-ply cord of sinew was rolled on the thigh as fiber was rolled.

281 Thongs and loin cloths were cut from buckskin even before there were sewed garments. To mark a straight line [804 413] for the cutting the worker blackened his bowstring with soot, laid it against the skin, then the cutting was done with a flake of flint. Sewing was first done on pouches and 294 quivers, then on simple garments. The needle was an awl of very hard wood which had to be obtained from the Altar valley and was sharpened with a stone and its head hardened on the fire. The thread was a buckskin thong pulled out very thin, twisted tightly and wet in the mouth.

WEAPONS

411 At present bows are made of mulberry *(Morus microphylla)* or, in its absence, of box thorn *(Lycium fremontii)*. A long new mulberry shoot about two inches thick and five feet long was cut in the rainy season; then the bark was removed and the protuberances rubbed down with a stone. The last quarter of the length at both ends was tapered to an inch in diameter by scraping with a stone, the ends being finished with a notch for the string and a bulbous projection beyond it.

The bow was bent by laying it in hot ashes, stones being placed on and around it so as to bend the ends up at a gradual angle. The central part must not be bent at all since this would weaken it. The ends were next tied in position with strong cord of agave fibers (not the bowstring) [531] and the bow set aside to dry thoroughly. It might then be painted with a series of red diagonal crosses down the outside, or it might have wrappings of deer sinew at either side of the hand grip.

The bowstring was a two-ply cord of deer sinew which was soaked, split with the teeth and rolled on the thigh. This hard rough cord was made rather smooth by running it [283] through a small perforation bored in a stick of sahuaro wood *(Carnegia gigantea)*.

The Papagos usually made stone-tipped arrows for war and large game, but wooden-tipped ones for small